

## REMARKS

### Status of the claims

Claims 1-9, 11, 13, 15-20 and 22-24 are pending in the application. Claims 1-9, 11, 13, 15-20 and 22-24 stand rejected. Claims 1, 6, 15, and 18 are amended. Claims 3, 4 and 5 are canceled. No new matter has been added.

### Amendment to the claims

Claim 1 is amended to incorporate the limitations of claim 3, wherein the susceptor is a dissociable ion, or a mixture of dissociable ions. The use of a metal susceptor has been deleted. Claims 4 and 5 have been canceled in view of the amendments to claim 1. This amendment is intended to overcome the 35 U.S.C. §103 rejection. Claim 6 is amended to further disclose surgical fasteners which comprise a fusion composition. These amendments are explicitly supported by the specification (pg. 17, ll. 1-4, pg. 23 ll. 14-17, pg. 33, ll. 21-33, pg.34, ll. 4-7 and ll. 27-28, pg. 36, ll. 20-24, pg. 41, ll. 28-30, pg. 44, ll. 13-21 and pg.46, ll. 3-5. Claims 15 and 18 are amended to reflect the election of species XXVII which is a flat applicator coil (Figs 28A-28C).

### Species election

The Applicants submit that the currently pending claims read only on species XXVII in figures 28A-28C as elected on November 9, 2006. The phrase "substantially flat" has been added to further limit the antenna. Species, e.g. solenoid, which do not depict a substantially flat applicator have been removed.

### The 35 U.S.C. §103 rejection

Claims 1-9, 13, 15-20 and 22 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) in further view of **Hedge et al.** (U.S. Patent No. 6,656,174). The Applicants respectfully traverse this rejection.

In rejecting independent claim 1, the Examiner states that **Gordon** discloses a method of treatment for tissue substrates in an individual comprising the steps of securing a tissue substrate proximal to a ferromagnetic metal susceptor, applying radiofrequency energy that generates a magnetic field to the substrate or susceptor to generate heat, and affixing the substrate together with the heat. The Examiner concedes that **Gordon** fails to explicitly recite

controlling the affixing of the substrates via feedback monitoring of a property of the substrate, the energy or a combination thereof, wherein the property is heat, an electrical property, eddy currents, conductivity, or frequency changes or a combination thereof.

The Examiner asserts that it is well known in the art that the connection of different portions of biological tissue can be effected by crosslinking of collagen and heated by various means. The Examiner also states that **Sawyer** discloses a method for welding biological tissue and teaches temperature range of 45°C to 75°C in order to form tissue welds/seals. The Examiner further states that **Hedge et al.** disclose a device featuring interior temperature sensors and method for heating treating biological tissue with RF energy.

The Examiner concludes that it would have been obvious to a person of ordinary skill in the art to modify the invention of **Gordon** as taught by **Sawyer** to provide heating temperature range for the treated tissue site in order to achieve a collagen crosslinked tissue seal/weld and as further taught by **Hedge et al.**, to provide the system with temperature sensor and temperature-feedback control in order to obtain and maintain a particular tissue treatment site temperature. Applicants respectfully disagree.

The Applicants have amended claim 1 to incorporate the limitations of claim 3, excluding the recitation of metal susceptors. None of the cited references teach or suggest the use of a dissociable ion, or a mixture of dissociable ions. **Gordon**, in particular, recites the use of metal particles but is silent regarding all other claimed embodiments. Furthermore, a person of ordinary skill in the art would not find the use of a dissociable ion, or a mixture of dissociable ions obvious based on the teachings of the cited prior art. The invention describes methods for inductively heating non-conventional substrates, i.e. biological materials, whereas conventional inductive heating typically is used for heating solid materials such as metals or plastics. The use of a dissociable ionic species or a mixture of dissociable ions as the susceptor in these biological materials is non-obvious because these are non-conventional substrates, and the use of ionic species as a susceptor further requires that the substrate be a liquid or semi-solid medium in order to conduct the eddy currents which form in response to the alternating magnetic field, ultimately resulting in dielectric heating.

On the other hand, conventional inductive heating applications involve heating based on hysteresis arising through the implementation of susceptor materials of high magnetic permeability used with solid substrates. In the case where the susceptor is an ion or mixture of ions, it is an absolute requirement that the medium be somewhat fluidic or dissociation of ions will not occur, and eddy currents will be impeded (p. 44, 13-21). This

impedance is also detectable as a change in conductivity and may be monitored as an indication of the extent or progress of the reaction (p. 46, ll. 3-11). The use of dissociable ionic species as the susceptor is also non-obvious because it provides the benefit of efficient heating by modulating the ionic conductivity between materials as a function of concentration which results in dielectric heating in the fusion composition (pg. 36, ll. 15-23) .

In distinct contrast, the use of metal particles alone do not provide the non-obvious advantages described herein. The prior art does not suggest or teach the use of a dissociable ionic species. For these reasons, the Applicants submit that claims 1-9, 13, 15-20 and 22 are not unpatentably obvious under 35 U.S.C. §103(a) over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) in further view of **Hedge et al.** (U.S. Patent No. 6,656,174). In view of the arguments presented herein, the Applicants respectfully request that the rejection of claims 1-9, 11, 13, 15-20, and 22 under 35 U.S.C. §103 be removed.

Claim 11 is rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) in further view of **Hedge et al.** (U.S. Patent No. 6,656,174) and in view of **Aida et al.** (US Patent 5,897,495). The Applicants respectfully traverse this rejection.

In rejecting claim 11, the Examiner states that **Gordon** in view of **Sawyer** and further in view of **Hedge et al.** disclose the claimed invention except for explicitly reciting the radio frequency energy being applied in pulses. The Examiner contends that it is well known in the art that radiofrequency may be applied in a continuous duration or in discreet pulses. The Examiner further states that **Aida et al.** disclose a system and method of heat-treating tissue and teach a transmitter coil for transmitting RF pulses. Thus, the Examiner concludes that it would have been obvious to one of ordinary skill in the art to modify the invention of **Gordon** in view of **Sawyer** and further in view of **Hedge et al.**, as taught by **Aida et al.**, to provide RF energy in pulses in order to heat-treat tissue.

For the reasons stated above, the amended independent claim 1 is not rendered obvious by **Gordon**, **Sawyer** and **Hedge et al.** **Aida et al.** do not remedy the deficiency of **Gordon**, **Sawyer** and **Hedge et al.**, namely the lack of teaching or suggesting of the currently recited susceptor embodiments. As a result, dependent claim 11 is also nonobvious over the combination of **Gordon**, **Sawyer**, **Hedge et al.** and **Aida et al.**

In view of the arguments presented, the Applicants respectfully request that the rejection of claim 11 under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) in further view of **Hedge et al.** (U.S. Patent No. 6,656,174) and in view of **Aida et al.** (US Patent 5,897,495) be removed.

Claims 23 and 24 are rejected under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) and in further view of **Hedge et al.** (U.S. Patent No. 6,656,174) and still in further view of **Eggers et al.** (U.S. Patent No. 5,366,443). The Applicants respectfully traverse this rejection.

The Examiner states that the combination of **Gordon**, **Sawyer** and **Hedge et al.** disclose the claimed invention except for heat is monitored via infrared optical detection. The Examiner asserts that it is well known in the art to provide room temperature sensors in various alternate/equivalent means. **Eggers et al.** is applied to teach that temperature sensing may be achieved using fiber optics with infrared sensing technique, a thermocouple, a thermistor, or other means. The Examiner concludes that it would have been obvious to a person of ordinary skill in the art to modify the invention of **Gordon** in view of **Sawyer** in further view of **Hedge et al.**, as taught by **Eggers et al.**, to provide the device and system with fiber optics with infrared sensing technique in order to provide specific example of temperature sensing means.

As discussed above, **Gordon**, **Sawyer** and **Hedge et al.** do not disclose the invention recited in claim 1, upon which claims 23 and 24 depend. **Eggers et al.** do not remedy the deficiencies of **Gordon**, **Sawyer** and **Hedge et al.**, namely the lack of teaching or suggesting of the currently recited susceptor embodiments. As a result, dependent claims 23 and 24 are also nonobvious over the combination of **Gordon**, **Sawyer**, **Hedge et al.** and **Eggers et al.**

In view of the arguments presented, the Applicants respectfully request that the rejection of claim 23 and 24 under 35 U.S.C. §103(a) as being unpatentable over **Gordon** (U.S. Patent No. 4,889,120) in view of **Sawyer** (U.S. Patent No. 5,824,015) and in further view of **Hedge et al.** (U.S. Patent No. 6,656,174) and still in further view of **Eggers et al.** (U.S. Patent No. 5,366,443) be removed. The Applicants submit that all pending claims are now in condition for allowance.

This is intended to be a complete response to the Office Action, mailed May


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26, 2010. If any issues remain outstanding, the Examiner is respectfully requested to telephone the undersigned attorney of record for immediate resolution. Applicants enclose a Petition for a Three Month Extension of Time. Please charge the \$555 extension fee under 37 C.F.R. §1.17(a) to the credit card identified on the enclosed Form PTO-2038. **Only in the absence of Form PTO-2038**, please debit any applicable fees from Deposit Account No. 07-1185, upon which the undersigned is allowed to draw.

Respectfully submitted,

Date:

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